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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/551,889	04/19/2000	Richard G. C. Williams	07452-046001	2800
20306	7590	11/03/2004	EXAMINER	
MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP 300 S. WACKER DRIVE 32ND FLOOR CHICAGO, IL 60606			BURD, KEVIN MICHAEL	
			ART UNIT	PAPER NUMBER
			2631	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/551,889

Applicant(s)

WILLIAMS, RICHARD G. C.

Examiner

Kevin M. Burd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13,15,16 and 20-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-26 is/are allowed.
- 6) ☒ Claim(s) 1,7-9,12,13,15,16 and 27-33 is/are rejected.
- 7) ☒ Claim(s) 2-6,10 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

1. This office action, in response to the amendment filed 7/6/2004, is a non-final office action.

Response to Arguments

2. Applicant's arguments with respect to the rejections of the claims have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection is made in view of Goldstein et al (WO 99/67890) and under 35 USC 112, second paragraph.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 27-33 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 27, Applicant states on line 7-8, "differentially decoding the channel output so as to obtain the frame" It is unclear which frame Applicant is referring to since a first encoded frame and a second-encoded frame is referenced previous to the recitation of "the frame" in line 7. Correction is required. In addition, Applicant states in lines 7-8, "wherein the differentially decoded sign of the frame and frame provide the frame with the proper sign." Clarification and correction of this statement is necessary.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1, 7, 8 and 9 are rejected under 35 U.S.C. 102(a) as being anticipated by Goldstein et al (WO 99/67890).

Regarding claims 1, 8 and 9, Goldstein discloses a method for compensating for channel inversion. The handshaking bits are differentially encoded (page 7, lines 16-17). The handshaking bits correspond to the sign of the samples or frames (page 7, lines 13-16). The samples that are input to the block framer 40 on figure 1 are inverted (page 7, lines 5-13). The transmitted data will be differentially decoded to recover the originally transmitted data.

Regarding claim 7, the samples comprise symbols in BPSK signals.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:-

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 12, 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein et al (WO 99/67890) in view of Norrell et al (US 6,084,883).

Regarding claims 12 and 15, Goldstein discloses the encoding method described above in paragraph 4. Goldstein does not disclose the differential encoding is performed before being supplied to a multiple modulus encoder. Norrell discloses a method of encoding data by generating a multiple modulus signal (abstract). This encoding will facilitate efficient data transmission and recovery by the distant receiver even in the presence of interference (abstract). Figure 5 shows the generation of the multiple modulus coefficients is the final step completed prior to transmission of the signal (steps 120 and 130). Column 7, lines 22-39, discloses the symbols are received at the receiver and are decoded by a reverse modulus conversion to recover the binary data. It would have been obvious for one of ordinary skill in the art at the time of the invention to utilize the multiple modulus decoding method of Norrell into the method of Goldstein to allow the data transmission to be efficient and allow the recovery of the signal at the receiver to take place even in the presence of interference (Norrell, abstract). In addition, Norrell states another advantage of using the multiple modulus conversion encoding and decoding method is that it allows a non-integer number of bits to be mapped to each symbol, which increases efficiency (column 7, lines 22-26).

Regarding claims 13 and 16, Goldstein discloses the encoding method described above in paragraph 4. Goldstein does not disclose the frame is differentially encoded before being supplied to a multiple modulus encoder. Norrell discloses a method of encoding data by generating a multiple modulus signal (abstract). This encoding will facilitate efficient data transmission and recovery by the distant receiver even in the presence of interference (abstract). Figure 5 shows the generation of the multiple

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modulus coefficients is the final step completed prior to transmission of the signal (steps 120 and 130). It would have been obvious for one of ordinary skill in the art at the time of the invention to utilize the multiple modulus encoding method of Norrell into the method of Goldstein to allow the data transmission to be efficient and allow the recovery of the signal at the receiver to take place even in the presence of interference (Norrell, abstract). In addition, Norrell states another advantage of using the multiple modulus conversion encoding and decoding method is that it allows a non-integer number of bits to be mapped to each symbol, which increases efficiency (column 7, lines 22-26).

Allowable Subject Matter

6. Claims 20-26 are allowed.
7. Claims 2-6, 10 and 11 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. Claims 27-33 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Thursday 9 am - 5 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin M. Burd
10/31/2004

**KEVIN BURD
PATENT EXAMINER**